Response to USEPA Comments on Gibbsboro FMP VI
Sump Depressurization and Venting Work Plan
April 8, 2016

General Comment #1 – EPA at this time cannot approve any active mitigation options for the on-site sumps, but approves a passive venting option. EPA will re-consider the installation of active systems only, if off-gas treatment is applied and addresses all of EPA's comments.

Sherwin-Williams requests permission to employ active venting on the sumps, because we believe it will be more protective. We understand that the EPA has a concern that the vapor emissions may require treatment to comply with New Jersey Department of Environmental Protection (NJDEP) emissions limits. As explained below, the proposed active venting system does not trigger NJDEP's air pollution control permitting program.

General Comment #2 – Any proposed system design must include provisions for intrinsically safe and explosion proof components.

By "intrinsically safe and explosion proof components" we assume the EPA means intrinsically safe **or** explosion proof, as these two ratings are mutually exclusive, in that if some piece of equipment is intrinsically safe there is no need for it to also be rated as explosion proof. Sherwin-Williams has designed to an intrinsically safe blower with a variable speed fan motor, which will allow easy "tuning" of flow rates. Technical data sheets for these intrinsically safe blower(s) are attached to this document.

Comment #3 – All documents, including all available in-door and sub-slab data (EPA & Sherwin-Williams), Health and Safety Plan (HASP), Work Plan, Monitoring Plan, QAPP, Emergency Response Plan, Evacuation Plan, etc., shall be provided to any proposed subcontractor for the installation of the "passive vent system", and any other proposed systems. Will the proposed subcontractor provide a separate HASP?

Sherwin-Williams has shared, and will continue to share, all pertinent project information and documentation, particularly any information that relates to safety, with any and all subcontractors.

Comment #4 – Will the proposed subcontractor provide their own HASP?

No, we have included Clean Vapor in section 1 of the HASP, and they will sign the HASP prior to commencing work.

Comment #5 – Provide a final report and as-built design for all systems installed.

A final report and as-built design drawings will be provided to EPA following system installation and commissioning.

Comment #6 – Provide a determination of air pollution control permit requirements, and estimate of air discharge concentrations (pounds per hour), as per the New Jersey Administrative Code (N.J.A.C.) and all applicable Titles and Chapters, for the operation of Subsurface Depressurization Systems (SSDS) and Soil Vapor Extraction (SVE) Systems applying the available sub-slab concentrations. Based upon this information, EPA will re-evaluate the application of "active vent systems".

The proposed active SSDS is not subject to NJDEP's air permit program. Sherwin-Williams reviewed NJDEP's Air Pollution Control Regulations relating to facilities that do not qualify for a major source Operating Permit. We found no provision of these regulations that would require an air permit for our application of the SSDS. The provision that could apply to this type of equipment requires an air permit for "any source operation of equipment that has the potential to emit any Group 1 or Group 2 TXS (or a combination thereof) at a rate greater than 0.1 pounds per hour (45.4 grams per hour)" (N.J.A.C. 7:27-8.2(c)2). Methane is not listed in either Group 1 or Group 2 TXS. Of the thirteen compounds listed as a Group 1 or Group 2 TXS (listed in Table 1, below), benzene is the only constituent detected in sub-slab vapor near sumps #1 - #3 and is present at the highest sub-slab concentration in this area near the location of sump #1. As of the latest sub-slab data collected by EPA/ERT in August 2015, benzene is present in sub-slab soil vapor at sample locations Unit2F-SS-007 (northwest of sump #1) and -008 (southeast of sump #1) at 4,900 and 36,000 $\mu g/m^3$, respectively. Using the higher of these two results, in order to calculate whether the SSDS system could trigger the permitting requirement by emitting 45.4 g/hr (0.1 lbs./hr), we divide 45.4 g/hr by (36,000 $\mu g/m^3$ =) 0.036 g/m^3 giving 1261 m^3/hr, or 742 cfm. We estimate that the sump #1 depressurization-active venting system will operate at less than 200 cfm, a fraction of the threshold volume required to emit 0.1 lbs/hr benzene, and thereby is not expected to reach the NJDEP air permit applicability threshold. Note that this result is obtained using the worst case sub-slab vapor result obtained near the sumps, and the saturated sub-slab vapor concentration. As mentioned in our response to Comment #2, the intrinsically safe blowers that have been specified have variable speed fans which will allow tuning for efficiency and, if necessary, emission level compliance. As part of the system commissioning process, Sherwin-Williams will collect non-methane TVOC measurements during system start-up to ensure compliance with N.J.A.C. 7:27-8.2(c). We anticipate a decrease in the concentrations during the initial stages of operation, so a mass emission greater than 0.05 lbs/hr in the short-term may not be sustained in the long-term. Our regulatory analysis of the non-applicability of NJDEP's air permit program to the SSDS is consistent with NJDEP's analysis of its air permitting authority found in Appendix K ("Application Flow Chart for an Air Pollution Control (APC) Permit") to its Vapor Intrusion Guidance, a copy of which is attached.

Table 1			
	NJDEP Toxic Substance	Unit2F-SS-007 August 2015 Sample Conc. (µg/m^3)	Unit2F-SS-008 August 2015 Sample Conc. (µg/m^3)
1	Benzene	4900	36000
2	Carbon Tetrachloride	ND (1300)	ND (1000)
3	Chloroform	ND (1300)	ND (1000)
4	Dioxane	ND (6600)	ND (5000)
5	Ethylenimine	NA	NA
6	Ethylene Dibromide	ND (1300)	ND (1000)
7	Ethylene Dichloride	ND (1300)	ND (1000)
8	1,1,2,2 Tetrachloroethane	ND (1300)	ND (1000)
9	Perchloroethylene	ND (1300)	ND (1000)
10	1,1,2 Trichloroethane	ND (1300)	ND (1000)
11	Trichloroethylene	67* ND (1300)	49* ND (1000)
12	Methylene Chloride	ND (6600)	ND (5000)
13	1,1,1 Trichloroethane	ND (1300)	ND (1000)
	ND = Not Dectected		
	NA = Not Analyzed for		
	* TARGA Loop Injection		Total = 55,000 µg/m3

Comment #7 – A flame arrestor and lightning protection should be incorporated in the design.

These design elements are not typically used in methane (or other flammable soil vapor) mitigation systems, nor are they required by NJDEP Vapor Intrusion Technical Guidance v3.1 or ASTM 2121-03. The Sherwin-Williams team has evaluated the need for flame arrestors in the sump depressurization/venting system, and found that the AICHE(1) and industry experts agree that there are dangers inherent to the use of flame arrestors, and that they are not recommended in situations where flammable conditions are present only occasionally and ignition sources are present only rarely, as is the case for this system. The proposed design uses non-conductive PVC pipe which would neither attract, nor conduct, lightning strikes. The intrinsically safe blower will be electrically grounded according to local electrical codes, and will thus be as lightning protected as any other roof mounted electrical motor in any HVAC package unit or power vent.

Comment #8 – It is recommended that the “passive vent system”, be installed with the flexibility for future transition to an active system.

Sherwin-Williams believes an active system will be more protective and requests permission to design and install an active system.

Comment #9 – Systems design shall conform to ASTM E2121-03, Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings.

ASTM E2121-03 is intended for sub-slab depressurization in residential buildings, whereas the sump venting system is a different application. Many elements of the ASTM standard are nevertheless relevant and will be followed as a matter of good practice. High permeability material requires less vacuum to achieve a given level of flow. The sump systems are highly permeable by design, so the ASTM standard performance specification of 6 to 9 pascals of vacuum may not be achieved nor be needed by the sump ventilation system to achieve a given volumetric flow rate. The design and performance metrics will be refined using system commissioning data.

HASP Specific Comment #1 – Section 1- the plan is missing signatures and Clean Vapor, LLC is not listed under subcontractor representatives. Acknowledgement of plan review, when will these signatures be provided?

Clean Vapor, LLC has been added to Section 1 as a subcontractor. Signatures will be affixed once the Plan and HASP are approved, and prior to work commencing.

HASP Specific Comment #2 – Please number pages for easy reference.

Pages have been numbered in the HASP and amendments.

HASP Specific Comment #3 – Section 3 - re-evaluate field checklist.

Field checklist in Section 3 was re-evaluated and appropriate FLD's were added.

HASP Specific Comment #4 – Section 4 – Task 01 – re-evaluate – add SSDS installation and all that apply.

The crack sealing task and sump depressurization/venting system installation tasks have been included as amendments. Task hazard analysis of the sump depressurization/venting system installation task begins on page 69.

HASP Specific Comment #5 – Section 5 – Monitoring – add FID to field instrumentation due to large number of petroleum hydrocarbons found.

The thermionic bead type LEL instrumentation selected (Q-RAE) will sense petroleum hydrocarbon vapors as well as methane. This is the appropriate equipment for assessing flammability risk. Since an FID will also sense methane, an FID would not offer additional information, only a lower detection limit than the LEL meter. The PID instrument (ppbRAE) selected is more appropriate for monitoring hydrocarbons, especially aromatic hydrocarbons as it does not respond to methane, and the PID has a much lower detection limit for aromatic hydrocarbons such as benzene than does an FID. Our analysis has indicated there is no realistic possibility that occupational exposure limits (OELs) will be exceeded for any petroleum hydrocarbons while performing this work, and the ppbRAE was included out of an abundance of caution. We feel our proposed monitoring instruments (Q-RAE and ppbRAE) are suitable for this task.

References

1) ***Protect your Process With The Proper Flame Arrestors***, M Davies and T Heidermann, CEP Magazine, December 2013.